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CALIFORNIA FOREST AND RANGE
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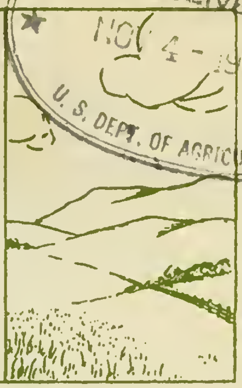

Research Note No. 25 September 15, 1940

PALATABILITIES OF FOOTHILL RANGE PLANTS FOR CATTLE

By A. L. Hormay, Associate Forest Ecologist

The following palatability figures represent preliminary information on a class of vegetation in California which has received comparatively little study in the past but is now claiming the attention of many experimental and land planning agencies. This vegetation is commonly referred to as the "annual type" because the herbaceous ground cover is dominated to the extent of 95 to 99 percent by annual plants, both introduced and native.

The type covers about 25,000,000 acres in the State at elevations mainly below 2,500 feet and includes the major portion of the uncultivated valley and foothill lands in the San Joaquin and Sacramento Valleys, the southern portion of the north Coast Range, and practically all of the south Coast Range except where shrubs and trees are too dense to permit herbaceous growth.

In past years forage palatabilities were developed primarily by the Forest Service for application in surveys on national forests where the herbaceous plant cover is dominated by perennials, but the Cooperative Western Range Survey in 1937, the Agricultural Adjustment Administration in their range programs since 1936, and the current Flood Control Surveys in the State have created a demand for palatability figures for annual-type plants.

The following figures were developed in 1937 to facilitate the completion of the Western Range Survey in San Benito County. Since data were not available for that locality at the start of the survey it became necessary to assemble the best available figures from previous work on national-forest ranges bordering on the annual type, and to revise the figures during the San Benito survey to fit local conditions. These figures of course are subject to further revision.

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Until more specific information becomes available from other surveys and from work at experimental centers such as the San Joaquin Experimental Range, which was established in the Sierra Nevada foothills in Madera County in 1935 for the purpose of studying range problems in the annual type, the following list is presented for its possible reference value to the growing number of agencies that are carrying out range and related work in the annual type.

Scientific name 1/	Symbol 2/	Percent palatability 3/	Scientific name	Symbol	Percent palatability
GRASSES AND GRASS-LIKE PLANTS					
Agrostis (perennials)	AG	70	Festuca (annuals)	F	30
Aira danthonioides	AId	40	Gastridium ventricosum	GAv	10
Aspris caryophyllea	ASc	10	Holcus halepensis	HOh	50
Avena barbata	AVb	50	Hordeum (annuals)	H	30
" fatua	AVf	60	Juncus (small, moist ground)	J	70
Bromus arenarius	Ba	20	" (large, dry land)	J	30
" carinatus	Bc	60	Koeleria cristata	Kc	60
" hordeaceus (mollis)	Bh	60	Lamarckia aurea	LAa	20
" madritensis	Bmd	20	Lolium perenne	Lp	70
" marginatus	Bm	60	" multiflorum	Lm	70
" racemosus	Brc	60	Luzula campestris	LUc	30
" rigidus	Brg	30	Melica bulbosa	Mbb	50
" rubens	Br	40	" imperfecta	Mi	10
" sterilis	Bs	30	" torreyana	Mt	10
" trinii	Btr	40	Phalaris	PA	40
Carex (large, moist ground)	C	40	Poa scabrella	Psc	60
" (small, " "	C	60	Polypogon monspeliensis	PYm	10
Dactylis glomerata	DCg	40	Sitanion hystrix	SIh	40
Danthonia	D	60	Stipa pulchra	Sp	60
Distichlis spicata	DIs	50	" lepida	Slp	60
Elymus (perennials)	E	50			
" caput-medusae	Ecp	10			

1/ Reference: A Manual of the Flowering Plants of California, by Willis Linn Jepson.

2/ Taken from an unpublished symbol list which includes all the plants in Jepson's Manual of the Flowering Plants of California. Prepared by A. L. Hormay in 1936.

3/ Rounded to nearest 10 percent and applicable most directly to San Benito County, California.

FORBS

Scientific name	Symbol	Percent palata-bility
Achillea millefolium var. lanulosa	ACm	30
Achyrachaena mollis	ACCm	10
Agastache urticifolia	AGSu	20
Agoseris (annuals)	AG	10
Allium	ALU	10
Amsinckia douglasiana	AKd	10
" intermedia	AKi	10
Anaphalis margaritacea	ANAm	0
Anthemis cotula	ANHc	0
Arabis	ARA	20
Asclepias eriocarpa	ASLe	10
" mexicana	ASLm	10
Aster	AST	10
Astragalus	AS	10
Baeria debilis	BAEd	10
Brassica campestris	BRc	20
Brodiaea capitata	Bca	10
Capsella bursa-pastoris	CAPb	10
Carum gairdneri	CRMg	20
Castilleia	CS	10
Centaurea melitensis	CENm	0
" solstitialis	CENs	0
Centromadia pungens	CEDp	0
Cerastium arvense	CERa	10
Chenopodium album	CPa	0
Chlorogalum pomeridianum	CHLp	10
Cirsium	CI	20
Collinsia bicolor	COb	0
Composites (annual)		10
Convolvulus	CV	10
Cynoglossum grande	CGg	10
Daucus pusillus	DAp	10
Delphinium	D	10
Dodecatheon	DO	0
Echinocystis	EC	20
Epilobium	EP	10
Eremocarpus setigerus	ERMs	0
Eriogonum nudum	EGn	20
Erodium botrys	Eb	60
" cicutarium	Ec	80
" moschatum	Em	70
Erysimum asperum	ERSa	10
Eschscholtzia californica	ESc	0

Scientific name	Symbol	Percent palata-bility
Euphorbia	EH	0
Evax sparsiflora	EVs	0
Fragaria	FR	0
Galium	GM	0
Geranium	GE	10
Gilia sp.	GI	0
Gilia tricolor	GIt	0
Godetia amoena	Ga	0
Grindelia	GRI	10
Hemizonia	HM	10
Hypericum concinnum	HPc	0
" perforatum	HPp	0
Lagophylla	LG	0
Lathyrus	LA	20
Layia	LAY	10
Lepidium	LEP	10
Linanthus	LI	0
Lomatium	LOM	10
Lotus (annual)	LO	30
" (perennial bushy)	LO	15
Lupinus (annual)	L	15
" (tall)	L	10
" (woody)	L	20
Madia	MA	10
Malva	MV	10
Marrubium vulgare	MABv	0
Matricaria	MR	0
Medicago hispida	MDh	80
Melilotus	ME	20
Mentzelia	MZ	0
Micropus californicus	MPc	0
Microseris	MI	10
Mimulus	MM	0
Montia perfoliata	MTp	15
Navarretia	NV	0
Nemophila	N	0
Orthocarpus	OR	10
Pentstemon	PE	10
Phacelia	PH	10
Phlox	PHX	0
Plagiobothrys	PL	10
Plantago erecta	PNe	10
Platystemon californicus	PLAc	0
Polygonum	PG	0

FORBS (Continued)

Scientific name	Symbol	Percent palatability	Scientific name	Symbol	Percent palatability
Polystichum	PQ	0	Suaeda moquini	SUm	0
Pteris aquilina	PTa	0	Thysanocarpus	TY	10
Ranunculus californicus	RAc	10	Trichostema	TR	0
Rumex	RU	10	Trifolium (moist ground)	T	50
Salsola kali	SALk	10	" (dry ground)	T	30
Salvia	S	10	Uropappus linearifolius	URl	10
Sanicula bipinnatifida	SANb	10	Urtica	UT	0
" menziesii	SANm	0	Verbena	VB	10
Senecio	SN	10	Vicia	VI	10
Sidalcea	SD	10	Viola	V	10
Silene californica	SIc	0	Wyethia angustifolia	Wa	20
Sisyrinchium bellum	SRb	10	Xanthium spinosum	XAs	0
Sonchus	SOC	0	Zygadenus	Z	0
Stachys bullata	SSb	0			

SHRUBS AND TREES

Scientific name	Symbol	Percent palatability	Scientific name	Symbol	Percent palatability
Adenostoma fasciculatum	ADf	10	Populus	PP	20
Aesculus californica	AEc	25	Prunus demissa	PRd	0
Alnus rhombifolia	ALNr	0	" emarginata	PRe	20
Arctostaphylos	A	0	" ilicifolia	PRi	10
Artemisia californica	ARc	0	Quercus agrifolia	Qa	20
" vulgaris	ARv	10	" chrysolepis	Qc	10
Atriplex	AT	10	" douglasii	Qdo	20
Baccharis pilularis	BCp	0	" dumosa	Qd	10
" viminea	BCv	0	" kelloggii		
Ceanothus	C	20	(californica)	Qk	20
Chrysothamnus	CRY	10	" lobata	Ql	10
Dendromecon rigida	DEr	0	" wislizenii	Qw	20
Diplacus aurantiacus	DIa	0	Rhamnus californica	RHc	10
Ephedra viridis	Ev	10	" crocea	RHcr	20
Eriodictyon californicum	ERc	0	Rhododendron occidentale	RRo	0
Eriogonum fasciculatum	EGf	10	Rhus diversiloba	Rd	40
Eriophyllum	EY	0	Ribes (not thorned)	RI	20
Fraxinus	F	0	" (thorned)	RI	0
Garrya	GA	0	Rosa californica	ROc	20
Holodiscus discolor	HOd	10	Rubus parviflorus	RBp	0
Juniperus californica	Jc	0	Salix	SL	20
Lepidospartum squamatum	LPDs	0	Salvia	S	10
Lonicera	LR	20	Sambucus glauca	SBg	20
Lotus scoparius	LOsc	20	Senecio douglasii	SNd	0
Nicotiana glauca	NIg	0	Solanum	SO	0
Photinia arbutifolia	PHTa	0	Symphoricarpos albus	SYa	20
Platanus racemosa	PLTr	0	Umbellularia californica	Uc	0
			Vitis californica	VTc	0